IN THE CLAIMS:

Claims 1, 4, 11, 14, 15, 21, 23, 25 and 26 have been amended herein. Please note that all claims currently pending and under consideration in the referenced application are shown below, in clean form, for clarity. Please enter these claims as amended. Also attached is a version with markings to show changes made to the claims.

1. (Amended) A gadolinium-containing metal alloy for neutron absorption consisting essentially of:

gadolinium at from about 0.1% to 10% by weight;;
chromium at from about 13% to 18.5% by weight;
molybdenum at from about 1.5% to 16% by weight;
manganese at from residual amounts to about 3% by weight;
nickel at from about 10% to 85% by weight;
residual amounts of phosphorus, sulfur, silicon, carbon, and nitrogen;
a ferrite content of less than 5% by weight; and
a balance of material substantially comprising iron.

2. A gadolinium-containing metal alloy as in claim 1 wherein the nickel is present at from about 50% to 85% by weight.

3. A gadolinium-containing metal alloy as in claim 1 wherein the nickel is present at from about 10% to 23% by weight.

4. (Amended) A stainless steel alloy consisting essentially of:

gadolinium at from about 0.1% to 4% by weight;

chromium at from about 13% to 18.5% by weight;

molybdenum at from about 1.5% to 4% by weight;

manganese at from about 1% to 3% by weight;

nickel at from about 10% to 23% by weight;

residual amounts of phosphorus, sulfur, silicon, carbon, and nitrogen; and

a balance of material substantially comprising iron, wherein the ferrite content of the alloy is less than 5% by weight.

5. A stainless steel alloy as in claim 4 wherein the gadolinium is present at from 0.1% to 2% by weight; the chromium is present at from 14% to 18% by weight; the molybdenum is present at from about 1.5% to 3% by weight; and the manganese is present at from about 1% to 2% by weight.

6. A stainless steel alloy as in claim 5 wherein the stainless steel alloy is formulated for manufacture using conventional stainless steel ingot casting technology.

7. A stainless steel alloy as in claim 5 wherein the nickel content is from about 11% to 15% by weight.

8. A stainless steel alloy as in claim 7 wherein the gadolinium is present at from 0.1% to 1.2% by weight.

9. A stainless steel alloy as in claim 4 wherein the stainless steel alloy is configured as an internal.

10. A stainless steel allow as in claim 4 wherein the stainless steel alloy is configured as a canister.

11. (Amended) A spent nuclear fuel storage system configured for thermal neutron absorption and corrosion resistance comprising:

a poisoned member, the poisoned member being substantially comprised of a cast stainless steel alloy, the alloy comprising:

gadolinium at from about 0.1% to 4% by weight;

chromium at from about 13% to 25% by weight;

molybdenum at from about 1.5% to 4% by weight;

manganese at from about 1% to 3% by weight;

nickel at from about 10% to 25% by weight;

residual amounts of phosphorus, sulfur, silicon, carbon, and nitrogen; and

a balance of material substantially comprising iron.

12. A system as in claim 11 wherein the poisoned member is an internal.

13. A system as in claim 11 wherein the poisoned member is a canister.

14. (Amended) A system as in claim 11 further comprising a second poisoned member having the composition of the cast stainless steel alloy, and wherein the poisoned member is an internal and the second poisoned member is a canister.

15. (Amended) A nickel-based alloy comprising:

gadolinium at from about 0.1% to 10% by weight;

chromium at from about 13% to 24% by weight;

molybdenum at from about 1.5% to 16% by weight;

iron at from about 0.01% to 6% by weight;

residual amounts of manganese, phosphorus, sulfur, silicon, carbon, and nitrogen;

a balance of material substantially comprising nickel; and

the nickel-based alloy being in a wrought state.

16. A nickel-based alloy as in claim 15 wherein the iron is present at from about 0.01% to 3% by weight.

17. A nickel-based alloy as in claim 15 wherein the chromium is present at from 20% to 24% by weight, and the molybdenum is present at from about 14% to 16% by weight.

18. A nickel-based alloy as in claim 15 wherein the gadolinium is present at from about 0.1% to 3% by weight.

19. A nickel-based alloy as in claim 15 wherein the nickel-based alloy is configured as an internal.

20. A nickel-based alloy as in claim 15 wherein the nickel-based alloy is configured as a canister.

21. (Amended) A nickel-based alloy consisting essentially of:

gadolinium at from about 0.1% to 10% by weight;

chromium at from about 13% to 24% by weight;

molybdenum at from about 1.5% to 16% by weight;

iron at from about 0.01 to 6% by weight;

residual amounts of manganese, phosphorus, sulfur, silicon, carbon, and nitrogen; and

a balance of material substantially comprising nickel wherein the nickel is present at greater than 50% by weight.

22. A nickel-based alloy as in claim 21 wherein the iron is present at 0.01 to 3% by weight.

23. (Amended) A nickel-based alloy comprising:

gadolinium at from about 0.1% to 10% by weight;

chromium at from about 20% to 24% by weight;

molybdenum at from about 14% to 16% by weight;

iron at from about 0.01 to 6% by weight;

residual amounts of manganese, phosphorus, sulfur, silicon, carbon, and nitrogen; and

a balance of material substantially comprising nickel wherein the nickel is present at greater than 50% by weight.

24. A nickel-based alloy as in claim 21 wherein the gadolinium is present at from about 0.1% to 3% by weight.

25. (Amended) A nickel-based alloy comprising:

gadolinium at from about 0.1% to 10% by weight;

chromium at from about 13% to 24% by weight;

molybdenum at from about 1.5% to 16% by weight;

iron at from about 0.01 to 6% by weight;

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residual amounts of manganese, phosphorus, sulfur, silicon, carbon, and nitrogen; and

a balance of material substantially comprising nickel wherein the nickel is present at greater than 50% by weight, wherein the nickel-based alloy is configured as an internal.

26. (Amended) A nickel-based alloy comprising:

gadolinium at from about 0.1% to 10% by weight;

chromium at from about 13% to 24% by weight;

molybdenum at from about 1.5% to 16% by weight;

iron at from about 0.01 to 6% by weight;

residual amounts of manganese, phosphorus, sulfur, silicon, carbon, and nitrogen; and

a balance of material substantially comprising nickel wherein the nickel is present at greater than 50% by weight, wherein the nickel-based alloy is configured as a canister.

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